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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/715,106	11/17/2003	Harue Nakashima	0553-0382	3243
<div>7590 08/02/2007 COOK, ALEX, McFARRON, MANZO CUMMINGS &amp; MEHLER, LTD. SUITE 2850 200 WEST ADAMS STREET CHICAGO, IL 60606</div>			<div>EXAMINER GARRETT, DAWN L</div>	
			<div>ART UNIT 1774</div>	<div>PAPER NUMBER</div>
			<div>MAIL DATE 08/02/2007</div>	<div>DELIVERY MODE PAPER</div>

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

Application No.

10/715,106

Applicant(s)

NAKASHIMA ET AL.

Examiner

Dawn Garrett

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 08 June 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 4-6 and 10-39 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 36 and 39 is/are allowed.
- 6) ☒ Claim(s) 4-6, 10-34, 37 and 38 is/are rejected.
- 7) ☒ Claim(s) 35 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 July 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Response to Amendment***

1. This Office action is responsive to the amendment filed June 8, 2007. Claims 4-6, 11, 12, 19, 20, 27, 28, 35, and 36 were amended. Claims 1-3 and 7-9 are canceled. Claims 4-6 and 10-39 are pending.
2. The rejection of claim 35 under 35 USC 112, second paragraph set forth in the last Office action (mailed March 8, 2007) is withdrawn due to the amendment.
3. The rejection of claims 4, 5, 27-34, and 36-39 under 35 U.S.C. 103(a) as being unpatentable over Nakagawa et al. (US 2004/0124766 A1) in view of Shi et al. (US 6,680,132) is withdrawn due to the amendment.
4. The rejection of claims 11-26 under 35 U.S.C. 103(a) as being unpatentable over Nakagawa et al. (US 2004/0124766 A1) in view of Shi et al. (US 6,680,132) in further view of Kim et al. (US 6,614,176) is withdrawn due to the amendment.
5. The rejection of claims 36-39 under 35 U.S.C. 103(a) as being unpatentable over Peng (US 20040046495) in view of Shi et al. (US 6,680,132) is withdrawn due to the amendment.

### ***Claim Rejections - 35 USC § 112***

6. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.
7. Claims 4-6, 10, 37 and 38 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably

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convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

- a. Claims 4-6 and 10 recite “a guest material including 4-(dicyanomethylene)-4H-pyran group”. While the specification is enabling for specific derivatives such as DCM1, DCM2, and DCJT as guest material, it is not seen where the specification supports the broadly disclosed guest material of claims 4-6 (10 is a dependent claim).
- b. It is not seen where the specification sets forth or describes a device having the specified metal complex as a guest in a layer (as required by claim 36) that additionally has a red emitting fluorescent material in the layer (as required by claim 37). Example 5 discloses the metal complex as a guest in a green emitting layer, but does not set forth a layer with the red emitting compound together with the complex as a guest material. Accordingly, claim 37 and claim 38 depending from 37 are considered to comprise new matter.

***Claim Rejections - 35 USC § 103***

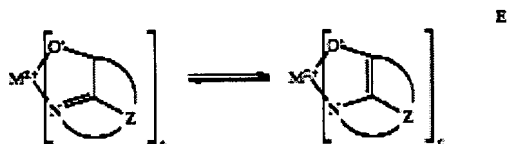
8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 6 and 10 are again rejected under 35 U.S.C. 103(a) as being unpatentable over Nakagawa et al. (US 2004/0124766 A1) in view of Shi et al. (US 6,680,132). Nakagawa et al. teaches organic electroluminescent devices comprising a substrate, anode, light emitting layers, and cathode (see abstract). The device comprises red, green

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and blue light emitting layers (see par. 142-154). The host for the red light emitting layer and the green light emitting layer may both be formed of a quinolinolato-based metal complex (see par. 162). Nakagawa et al. does generally teach quinolinolato-based metal complexes, but fails to teach the specific quinolinolato metal complexes of the present claims. Shi et al. teaches in analogous art a red light emitting layer for an electroluminescent device comprising metal complexes such as chelated oxinoid compounds (also known as quinoline compounds) (see col. 8, lines 46-67) including the following formula (see col. 8, lines 5-27) for the host material:



wherein

M represents a metal;

n is an integer of from 1 to 4; and

Z independently in each occurrence represents the atoms completing a nucleus having at least two fused aromatic rings.

Since M represents a metal, this teaching encompasses Ti, Zr, Hf and Rf of Group IV and more specifically, Shi et al. clearly mentions “Zirconium oxine” at col. 8, lines 66-67.

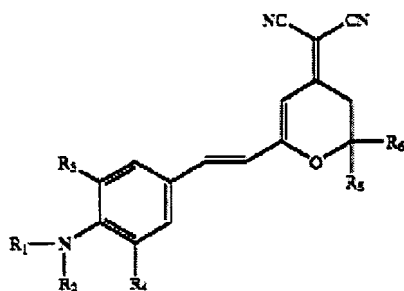
The ligand required by the instant claims is clearly taught by Shi et al. (see all of col. 8).

It would have been obvious to one of ordinary skill in the art at the time of the invention to have selected the host compound taught by Shi et al. for the Nakagawa et al. host material for the red and green emitting layers, because Nakagawa et al. teaches such a compound is desirable as the host.

The dopants for the red emitting layer include red emitting DCJTb and DCM (see par. 160).

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10. Claims 4 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shi et al. (US 6,680,132). Shi et al. discloses red organic electroluminescent devices comprising at least one organic luminescent medium including a dicyanomethylene pyran formula:

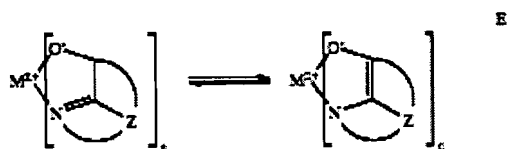


wherein:

R1 and R2 are individually alkyl of from 1 to 20 carbon atoms, aryl, substituted aryl, carbocyclic and other heterocyclic systems; and R1 and R2 can be connected to form 5 or 6 member ring systems; and R3 and R4 are individually hydrogen; alkyl of from 1 to 10 carbon atoms, and a branched or unbranched 5 or 6 member substituent ring connecting with R1, R2 respectively; and R5 and R6 are individually hydrogen; alkyl of from 1 to 20 carbon atoms; aryl and heteroaryl of from 5 to 24 carbon atoms; and R6 can be connected with R5 to form a branched or unbranched 5 or 6 member carbocyclic ring.

(see abstract). These compounds are used as dopants (see entire document) and read upon a red-emitting dopant. As a useful host of the luminescent layer Shi et al. teaches metal complexes such as chelated oxinoid compounds (see col. 8, lines 46-67) including the following formula (see col. 8, lines 5-27):

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wherein

M represents a metal;

n is an integer of from 1 to 4; and

Z independently in each occurrence represents the atoms completing a nucleus having at least two fused aromatic rings.

Since M represents a metal, this teaching encompasses Ti, Zr, Hf and Rf of Group IV and more specifically, Shi et al. clearly mentions “Zirconium oxine” at col. 8, lines 66-67.

The ligand required by the instant claims is clearly taught by Shi et al. (see all of col. 8).

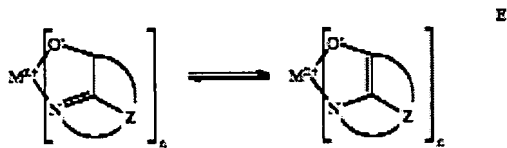
Although Shi et al. fails to *exemplify* a device using a combination of Group IV complex host material with the red luminescent dopants of the formula shown in the abstract, it would have been obvious to one of ordinary skill in the art at the time of the invention to have formed a device comprising a luminescent layer of the Ti, Zr, Hf and Rf complexes in combination with the red emitting dopants, because Shi et al. clearly teaches the complexes as suitable hosts and the red emitting compounds as suitable red dopants for a luminescent layer of an electroluminescent device.

11. Claims 11-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shi et al. (US 6,680,132) in view of Kim et al. (US 6,614,176). Shi et al. discloses red organic electroluminescent devices comprising at least one organic luminescent medium including red-emitting DCM-type derivatives (see abstract). These compounds are used as dopants (see entire document) and read upon a red-emitting dopant. Shi et al. fails to teach the specific red-emitting DCM derivatives of claims 11, 12, 19, 20, 27, and 28.

Kim et al. teaches in analogous art useful dopants for a light emitting layer

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comprising DCJTB, DCM1 (Kim et al. sets forth this compound as “DCM”), and DCM2 (see col. 3 and 4). It would have been obvious to one of ordinary skill in the art to have selected the DCM derivatives taught by Kim et al. for the Shi et al. device, because Kim et al. teaches the DCM derivatives as suitable dopants for a light emitting device. One would have expected the DCM derivatives to be similarly useful in the Shi et al. device, especially since Shi et al. disclose DCM-type derivatives as suitable for their devices. As a useful host of the luminescent layer Shi et al. teaches metal complexes such as chelated oxinoid compounds (see col. 8, lines 46-67) including the following formula (see col. 8, lines 5-27):



wherein

**M** represents a metal;

**n** is an integer of from 1 to 4; and

**Z** independently in each occurrence represents the atoms completing a nucleus having at least two fused aromatic rings.

Since **M** represents a metal, this teaching encompasses Ti, Zr, Hf and Rf of Group IV and more specifically, Shi et al. clearly mentions “Zirconium oxine” at col. 8, lines 66-67. The ligand required by the instant claims is clearly taught by Shi et al. (see all of col. 8). Although Shi et al. fails to *exemplify* a device using a combination of Group IV complex host material with the red luminescent dopants, it would have been obvious to one of ordinary skill in the art at the time of the invention to have formed a device comprising a luminescent layer of the Ti, Zr, Hf and Rf complexes in combination with the red emitting dopants, because Shi et al. clearly teaches the complexes as suitable



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hosts and the red emitting compounds as suitable red dopants for a luminescent layer of an electroluminescent device.

***Allowable Subject Matter***

12. Claims 36 and 39 are allowed. Claim 35 would be allowable if rewritten to include all of the limitations of the base claim and any intervening claims. The closest prior art is considered to be the references discussed in this office action. The references do not render obvious using a compound according to formula 2 as both a host in one light emitting layer and a guest in another light emitting layer.

***Response to Arguments***

13. Applicant's arguments filed June 8, 2007 have been fully considered but they are not persuasive.

With regard to the maintained rejection over claims 6 and 10, applicant appears to argue the references do not disclose or recognized "improved efficiency of energy transmission by applying the complexes of Group 4 as a host material and materials such as 4-(dicyanomethylene)-4H-pyran group as a guest material". In response, the examiner submits recitation of a newly disclosed property does not distinguish over a reference disclosure of the article or composition claims. *General Electric v. Jewe Incandescent Lamp Co.*, 67 USPQ 155. *Titanium Metal Corp. v. Banner*, 227 USPQ 773. Applicant bears responsibility for proving that reference composition does not possess the characteristics recited in the claims. *In re Fitzgerald*, 205 USPQ 597, *In re Best*, 195 USPQ 430. Per M.P.E.P. § 2145, the arguments of counsel cannot take the place of evidence in the record. *In re Schulze*, 346 F.2d 600, 602, 145 USPQ 716, 718 (CCPA 1965); *In re Geiseler*, 116 F.3d 1465, 43 USPQ2d 1362 (Fed. Cir. 1997).

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***Conclusion***

14. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).


A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dawn Garrett whose telephone number is (571) 272-1523. The examiner can normally be reached Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Milton Cano can be reached on (571) 272-1398. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

  
Dawn Garrett  
Primary Examiner  
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